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Alumni Association

333 Ravenswood Avenue • M/S AC-108
Menlo Park, CA 94025-3493

Voicemail: 650-859-5100
Email: steering-committee-alumni@sri.com
Web page: https://srialumni.org/

Message from Archives Chairman Don Nielson

Don Nielson

One of the exciting things about working at a research institute like SRI is discovering the significant work going on there. Even if you are not personally involved, it lends a credibility to the place that is tangible and may even influence how you value your own contributions. Caren Rickhoff, our editor for illuminating what's underway at SRI, has selected some items that will bring you pride in where you worked. You will revisit TALL, SRI's promising approach to treating pancreatic cancer, and learn that the FDA recently gave the approach special status for ongoing work in the early detection and treatment of this most lethal of cancers. Add to that a new approach to metal alloys whose composition can be tailored even within a single metallic part, roaming sensors that help characterize the unknowns in the oceans that cover three-quarters of our planet, and figuring out how to create droplets of even viscous liquids and you'll see that the eclectic research nature of SRI is alive and well.

To remind you of how eventful SRI's research history has been, one of the world's largest technical organizations, the IEEE, has a measure, its Milestone Awards. They are notable and hard to win. You'll read about a recent ceremony in the PARC, now SRI Palo Alto, auditorium, where three such awards were given to PARC. Together with three from Sarnoff Labs plus SRI's own three awards, SRI now has a total of nine IEEE Milestone Awards, far more than any other organization anywhere. Befittingly, that noteworthy accrual reveals a common research heritage, compatible with and now part of SRI.

To finish the story of SRI's "Stanford Dish," you'll discover how it has spent most of its 60-year life and how SRI and Stanford have sought opportunities to keep it vital.

Next, we welcome a not-often-voiced account of how SRI gave one alumna the training and credentials to open more post-SRI doors that she could have imagined. Many observers of SRI claim that its most compelling product lies in the scope of training it provides those who decide to move on. You'll see it spelled out clearly here after a tenure of less than four years.

Also in this issue are pictures from the Spring Fling and details of the upcoming reunion that we hope you will attend, both to meet old colleagues and to check on the status of the Institute from its CEO.

Last, you'll bid farewell to some notable alums who left their mark at SRI and in the world beyond. One, who served this alumni organization beyond measure, was Joyce Berry. Please read about her many contributions and in them find some inclination to join us on our Alumni Association mission. It doesn't take much time but keeps us along a trail of relevance to the place that became part of you!

The Annual Reunion is on October 3. Please see the announcement on page 19. The invitation flyer for the event is enclosed with this mailing.

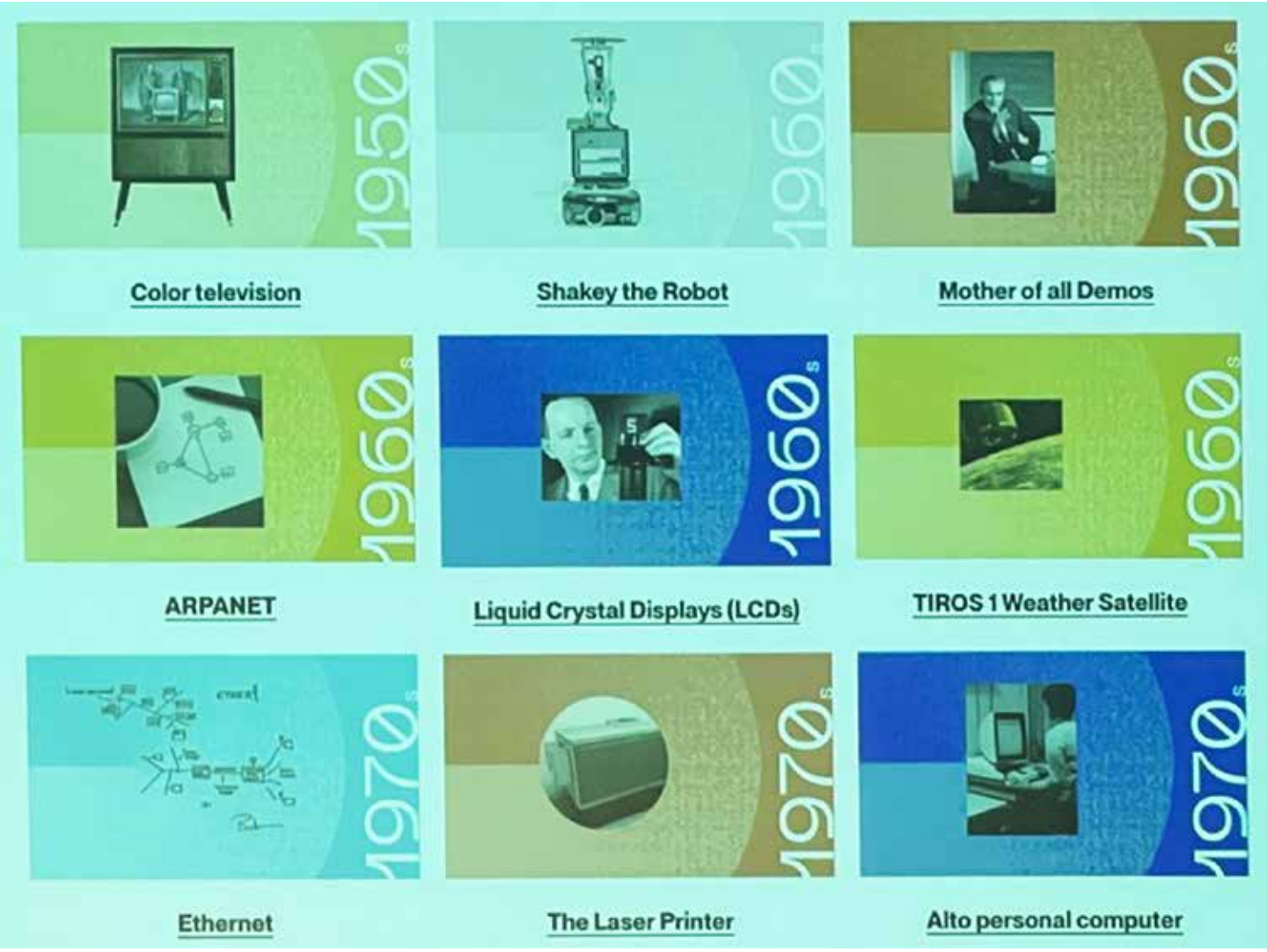
Three IEEE Milestone Awards Presented at SRI's Relaunched PARC Forum

As described in the April Newsletter, on April 4 SRI reinstituted the PARC Forum. This had been a feature of Xerox PARC over many years for both illuminating PARC's accomplishments and offering a place for others to discuss important topics in the information technology field. This renewed event had two parts, Pulitzer Prize-winning author David Leonhardt's interview of SRI CEO David Parekh and a showcasing of PARC's illustrious past through the presentation of three IEEE (Institute of Electrical and Electronics Engineers) Milestone Awards.

These Milestone Awards are not easily won, and only about 280 have ever been given out. The PARC auditorium was packed, mostly with PARC alumni who had some hand in the innovation behind the awards plus SRI staff, present and past. Several speakers discussed how the technology behind the Milestone Awards arose. The IEEE president and other officials then made the actual presentations.

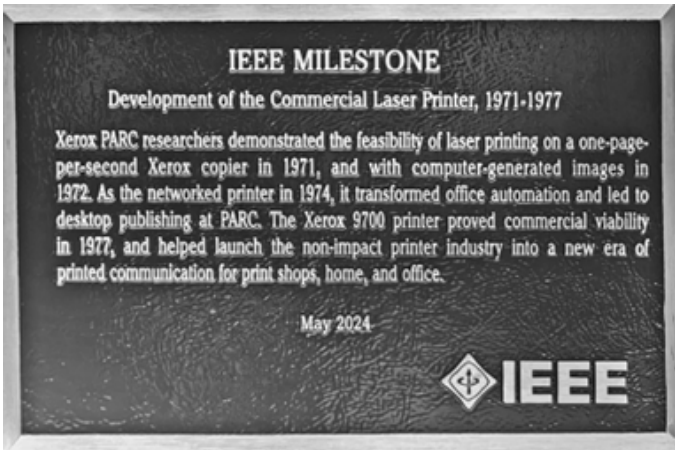
The three PARC Awards bring the total that SRI now holds to nine, three by virtue of its own contributions plus three from Sarnoff. SRI's were for Shakey, Douglas Engelbart's revolutionary demonstration of interactive computing, and the ARPANET. Those from Sarnoff were color television, liquid crystal displays, and the TIROS weather satellite system.

The three PARC Milestones announced on April 4 were for the laser printer, the Alto personal computer, and the Ethernet. The corresponding plaques describing the reasons for the award are shown here. All told, this is confirmation of an unusually creative research combine!

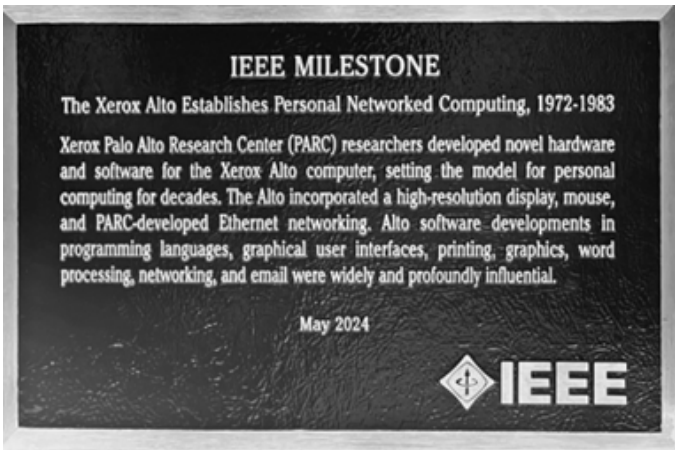


SRI's nine IEEE Milestone Awards and the decade of their technology.

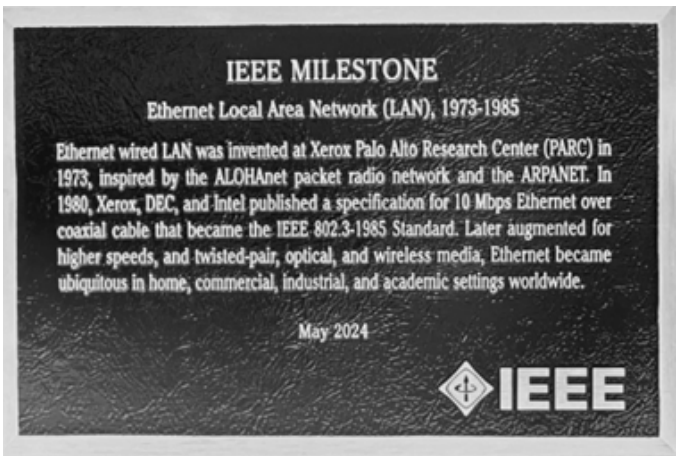
It was a splendid, heady day that clearly revealed in no small way PARC's legendary past. Today, PARC's agenda extends well beyond just information sciences, so much so that its resemblance to SRI itself portends a successful blend as it is now literally a part of SRI.



IEEE Milestone Award for the commercial laser printer.



IEEE Milestone Award for the personal computer.



IEEE Milestone Award for the Ethernet.

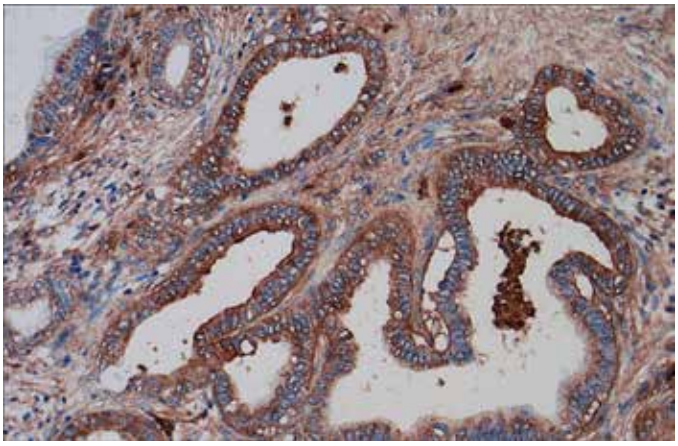
SRI Earns FDA Orphan Drug Designation for Pancreatic Cancer Treatment

In a move that promises to accelerate development of SRI's targeted antigen-loaded liposomes (TALL®) immunotherapy, the US Food and Drug Administration (FDA) granted the novel therapy orphan drug designation (ODD) as a treatment for pancreatic ductal adenocarcinoma. Securing this highly desired designation is no small feat. The designation means that SRI's future strategic partners can gain such key advantages as

- Potential market exclusivity for seven years after FDA approval
- Tax credits for qualified clinical trials
- Exemption from FDA user fees.

"FDA's orphan drug designation brings worthy attention to the demonstrated impact of SRI's TALL biotherapeutic for pancreatic cancer," said Kathlynn Brown, president of SRI's Biosciences Division. "This milestone fuels SRI's deep commitment to pioneering health and precision medicine solutions that bring hope to patients and their families."

TALL is a treatment modality that expands the benefits of immunotherapies such as checkpoint inhibitors. Details about the potential therapy and the urgent need for effective treatments for patients with pancreatic cancer are provided in the December 2023 issue of the *SRI Alumni Association Newsletter*. Briefly, pancreatic cancer is difficult to detect in early stages and has the highest mortality rate of all major cancers, with only a 3% relative survival rate at five years for the advanced form. Pancreatic tumors are highly resistant to chemotherapy and radiation, and there are few treatment options. SRI's TALL has the potential to overcome these



SRI molecular guidance system immunohistochemical staining of pancreatic ductal adenocarcinoma.

and other challenges and greatly extend the benefits to more patients.

"SRI is to be congratulated for advancing to this pivotal step," said Dr. Timothy Cote, former head of the FDA ODD program and current chief executive officer of Only Orphans Cote. "Their science in this field is strong, and the FDA has affirmed that they are providing a genuine orphan drug. SRI's work in the precision medicine domain sets a standard for the industry and offers life-changing solutions for those in need."

An orphan drug is intended for use in rare diseases. More than 7,000 rare diseases have been identified, and an estimated one in 10 Americans live with a rare disease; half are children. Still, roughly 95% of these diseases do not have FDA-approved treatments. To encourage organizations to address patient unmet needs, the federal government passed the Orphan Drug Act in 1983. The Act defines a "rare disease" as a disease or condition that affects fewer than 200,000 people in the United States.

"This greatly streamlines the go-to-market process toward final FDA clinical drug approval," said Brown. "We are looking forward to working with our strategic partners to offer the ability to take advantage of the tremendous cost savings and other benefits that come with this designation, including tax credits for clinical trials and a faster go-to-market timeline. The FDA ODD program and its potential bring hope to many cancer patients fighting this horrible disease, and we look forward to reaching more patients through the accelerated process."

Sources:

SRI News, May 21, 2024. https://www.sri.com/press/story/sri-earns-fda-orphan-drug-designation-for-pancreatic-cancer/

SRI Alumni Association Newsletter. *A new TALL order*. August 2023, p. 6. Accessed at https://srialumni.org/newsletters/2023/AlumNews-Dec-2023.pdf

National Organization for Rare Disorders. *Rare disease day: Frequently asked questions*. Accessed at https://rarediseases.org/wp-content/uploads/2019/01/RDD-FAQ-2019.pdf

Food and Drug Administration. *Designating an orphan product: Drugs and biological products*. Accessed at https://www.fda.gov/industry/medical-products-rare-diseases-and-conditions/designating-orphan-product-drugs-and-biological-products

Problem Solved: Fine Droplets from Viscous Liquids

Across food, chemical, pharmaceutical, and other industries, many liquid materials are turned into fine powders through spray drying for use in tablets, powders, capsules, paints, or dried foods. However, current methods that use nozzles have huge energy requirements and cannot accommodate high-viscosity applications. "Existing technologies are limited when spraying thick and viscous materials, especially if they contain 50% water or less," said David Johnson, associate director of the Mechanical and Fluid Systems Group at SRI. "Evaporating water from thick materials requires an enormous amount of energy."

SRI's new technology—filament extension atomizer (FEA)—allows manufacturers to spray difficult materials while dramatically cutting energy costs. The FEA works by squeezing fluid between two high-speed rollers in contact with each other, which spin to create filaments and stretch them to their breaking point until they fracture into fine droplets. By varying the process parameters (for example, the roller size or speed), researchers can produce different-sized droplets for a variety of applications. The team has demonstrated that FEA spray technology can save time and energy, especially when drying thick or viscous liquids.

Filament extension atomizer uses rollers to create fine droplets from viscous liquids in an energy-efficient process.

SRI is currently working with the US Department of Energy and industrial partners to mature this technology and help manufacturers realize savings across the US food and beverage industry. "FEA offers a new and different way of making products inspired by the natural behavior of fluids. On their own, certain fluids make filaments and break into droplets. We've found a way to take advantage of these properties to produce a fine spray that requires very little energy," Johnson said. That is, FEA takes advantage of this property instead of trying to fight it.

Potential uses for FEA are vast and include drying various polymers, thermoplastics, paints, coatings, a wide range of food products, cosmetics, medicine, and therapeutics. The dairy industry uses spray drying to turn whey, a by-product of cheese and yogurt, into protein-rich powders. Today, whey needs to contain more than 50% water to be spray dried. SRI researchers have shown that FEA can spray dry whey materials that contain only 20% water. "Our technology greatly reduces the amount of water needed. In large-scale industrial applications, that translates into significant energy savings and carbon reductions," said Johnson.

The technology could also enable next-generation spray-on consumer products. A hand-held version could be used to spray thick sunscreen or cosmetics easily. This would offer benefits including lower shipping costs, convenient packaging, and less waste. Similarly, FEA could be used for environmentally friendly spray-on paints or coatings using fewer solvents.

This work is supported by the US Department of Energy's Office of Energy Efficiency and Renewable Energy (EERE) under the Advanced Manufacturing Office Award Number DE-EE0009128.

Source:

SRI news, March 19, 2024. https://www.sri.com/press/story/a-new-spray-drying-technology-could-cut-high-energy-costs-and-increase-efficiency-across-large-industries/

These Ocean Drifters Are Small, Rugged, Low-Cost, Autonomous, Environmentally Friendly Scouts

Oceans are enormous, with a surface area of about 140 million square miles, yet most of what happens in the oceans remains a mystery.

To help civilian researchers, commercial entities, and governments understand maritime happenings, SRI researchers created a novel ocean drifter. Known as a persistent environmental awareness reporting and location (PEARL) drifter, thousands of these devices are being deployed to acquire a plethora of data that are sent to shore. By forming a sprawling network, PEARL drifters can pick out proverbial needles in the oceanic haystack, enhancing numerous applications in environmental monitoring and national security. The overall range of sensing capabilities packaged together at low cost is what sets PEARL drifters apart from other oceangoing drifter platforms that have been developed in recent years.

"Oceans are mostly vast and uninteresting," said Julie Bert, director for the Hardware Research and Technology Laboratory at SRI. "But if you have something like our drifters that can say, 'Hey, here's where there's interesting activity,' across all of the hundreds of thousands of square kilometers you're monitoring—that's very valuable."

"With these drifters, you can start to fill in the gaps from a monitoring capability perspective," added Brien Buckman, who is leading commercialization efforts for PEARL. "The ability to understand what is happening in remote areas and provide an unprecedented level of data and insight is game-changing."

PEARL drifters deliver ocean intelligence.

PEARL drifters pack small, yet powerful and energy-efficient componentry into a chassis structured with corrosion-resistant material. The PEARL drifters record and report data that are processed by advanced edge analytics before being compressed for satellite transmission to populate a large data repository with sensor data that are combined and analyzed to discover signals of interest in the ocean environment. They include a host of sensors for detecting oceanographic parameters as well as anthropogenic activity, such as ships or other types of human presence, and cover the gamut of perceptual ability. Examples include temperature, humidity, and atmospheric pressure sensors; an onboard solar panel that measures solar radiance; and an inertial measurement unit that contains an accelerometer, gyroscope, and magnetometer.

Additional mission-relevant sensors can be included depending on customer needs.

The drifters have been designed with the environment in mind. For example, Bert said her group used as little plastic as possible in the drifter architecture. To prevent them from washing up on beaches, the devices have little glass panels that can break, letting in air and water so they sink to the bottom of the ocean where their environmental impact is minimized. This feature can also be activated on command or based on preset conditions such as geolocation.

"We've been very conscious of device end-of-life and about making sure they don't drift into places where the government or other customers may not want them," said Bert.

So far, two generations of drifters have been manufactured and delivered to customers, totaling 1,500 and 5,000 each, respectively. Most drifters were deployed as part of the Defense Advanced Research Projects Agency's (DARPA's) Ocean of Things program.

With the DARPA program now concluded, PEARL drifters are continuing to receive significant attention—particularly from branches of the US military—and a third phase of development is under way. "We're excited to continue building relationships with government and commercial entities who have an interest in the insights that can be derived from this platform," said Buckman.

Sources:

SRI news, April 22, 2024. https://www.sri.com/press/story/sri-researchers-develop-rugged-low-cost-drifting-sensors-to-learn-more-about-the-oceans/

SRI webpage. https://www.sri.com/fcd_technology/ocean-of-things-pearl-ocean-drifters/

Cocker E, Bert JA, Torre F, et al. Low-cost, intelligent drifter fleet for large-scale, distributed ocean observation. *OCEANS 2022*, IEEE Conference, Hampton Roads, VA, USA, 2022, pp. 1–8.

Revamping the Materials Design Process

DARPA selected SRI to deliver advanced technology for its recently launched Multiobjective Engineering and Testing of ALloy Structures (METALS) program.

In traditional design and manufacturing of planes, ships, vehicles, and other structures, every part or individual component is typically constructed from a single material. This one part–one material constraint can lead to vulnerabilities when highly engineered components experience different local forces or environments in service. The goal of the four-year DARPA METALS program is to develop technologies that treat material selection—particularly metallic alloys—as a continuous variable in design that can be tailored across a single part.

SRI's approach will radically expand the design space, enabling breakthroughs in system-level performance, cost, and sustainability. SRI and its collaborators will develop new ways to integrate materials into the design process and break new ground in rapid, intelligent testing for advanced material properties. SRI will leverage artificial-intelligence-based material informatics to inform design space exploration through testing.

The work is being led by researchers in SRI's Future Concepts division, previously known as the Palo Alto Research Center, a team that has been at the forefront of digital design and manufacturing research for more than a decade.

Today, designers have to work with a discrete selection of materials that are provided to them by material scientists that are not necessarily optimal for the specific needs of a component or application. "There is no design tool that can vary materials in three-dimensional space while simultaneously accounting for metallurgical constraints," said Morad Behandish, research director for Design and Digital Manufacturing at SRI and principal investigator on the project. "We're building a design tool that will allow us to create components with desired properties on the fly, place them precisely where needed, test them in the environment in which they'll be used, and envision new alloys that do not yet exist."

SRI will collaborate with the University of Illinois Urbana-Champaign (UIUC) and the University of California at San Diego (UCSD) to develop MIDAS-X: Material-Integrated Design with Agile Sampling for experimental testing. SRI's capabilities in generative design exploration and AI, UIUC's novel testing methods, and UCSD's unique manufacturing capabilities make a strong team with a highly innovative approach. SRI aims to build design tools with an evolving understanding of materials feasibility grounded in rapid testing to make the best use of existing materials and discover new materials.

SRI's system will change design shape and materials simultaneously to optimize for many factors and navigate a trade space of cost and time to build, structural and thermal performance, supply chain risks, and more. The system relies on a unique approach, based on UIUC's recent discoveries, to predict advanced properties from nanoscale

events observable under an electron microscope, enabling orders of magnitude faster material characterization.

"This program marks a turning point in how we design, make, and validate materials at an exciting crossroads of innovation in computational design, materials science, digital manufacturing, and AI," Behandish emphasized. "The biggest impact will be on high-end applications, especially when human life is trusted with engineered equipment, where the reliance on outdated engineering methods in current practice takes significant time and cost in design cycles and material systems adoption."

Sources:

SRI news, April 29, 2024. https://www.sri.com/press/story/researchers-aim-to-disrupt-how-new-materials-are-leveraged-in-the-design-process/

Defense Advanced Research Projects Agency. *Breaking the one part-one material paradigm*. March 3, 2023. Accessed at https://www.darpa.mil/news-events/2023-03-22

SRI Announcements

Patrick Lincoln Named New President of SRI's Information & Computing Sciences Division

Patrick Lincoln has been promoted to president of SRI's Information & Computing Sciences (ICS) division. Lincoln brings deep knowledge across an array of technical disciplines, experience working with commercial and government clients, and an extraordinary track record leading multidisciplinary groups on high-impact projects. In 2005, he was named an SRI Fellow, the organization's highest technical honor for individuals, in recognition of sustained and exceptional technical, scientific, and professional contributions to solving important problems for clients and society.

"Pat's appointment brings a new era of leadership to this division and to SRI," said David Parekh, CEO of SRI. "With his expertise and dedication, he will advance the team in very important areas like AI, human-machine collaboration, trust and security, and beyond. His appointment represents a bold vision as SRI continues to invent and deliver technology that impacts millions of lives."

Lincoln joined SRI in 1989 and has served as vice president of ICS and director of the Computer Science Lab (CSL), where he led research projects in the fields of formal methods, computer security and privacy, national security, scalable distributed systems, nanoelectronics, and many others.

Under his leadership, SRI made significant contributions to the formal analysis of systems, cybersecurity, languages, and protocols in computer security, privacy, fault tolerance, and integration into scalable and survivable systems.

"I am honored to take on this role at SRI, an amazing place to work and collaborate across many fields. There is nothing more exciting than working with the passionate people here and developing new ways to solve big problems, and I am eager to work with my colleagues throughout the institute to do so," said Lincoln.

Lincoln previously held positions at Millennial Challenge Corporation, Los Alamos National Laboratory, and Control Data, and he helped found several companies. He has advised several boards and panels for US government agencies, commercial organizations, and nonprofits; has published dozens of papers; and holds numerous patents.

Lincoln earned his PhD in computer science from Stanford University and his BSc in computer science from the Massachusetts Institute of Technology.

Source:

https://www.sri.com/press/story/sri-promotes-patrick-lincoln-to-president-of-the-information-computing-science-division/

Stefan Heck Joins SRI's Board of Directors

Stefan Heck joined SRI's Board of Directors, effective June 1. Heck is CEO and Founder of Nauto, the Palo Alto-based AI-technology company on a mission to make driving safer and more efficient.

Prior to that, he was a consulting professor at the Precourt Institute for Energy at Stanford University, directed the Energy Transformation Collaborative, and was a research fellow at the Steyer-Taylor Center for Energy Policy and Finance at Stanford's business and law schools. Earlier, he was a senior partner at McKinsey, cofounded and led the Cleantech and Sustainability practice, and worked with 100 global partners around the world.

Heck is an active angel investor for disruptive technology companies and has served on the boards of Silicon Valley Leadership Group and GaN Systems. He is coauthor of *Resource Revolution: How to Capture the Biggest Business Opportunity in a Century*.

Heck earned his PhD in cognitive science from the University of California at San Diego and his BS with honors in symbolic systems from Stanford University. As an undergrad, he launched Stanford's first Solar Car project, which continues today.

Source:

https://www.sri.com/press/story/stefan-heck-to-join-sris-board-of-directors/

Charles "Charlie" Mathis Joins SRI's Board of Directors

Charlie Mathis has joined SRI's Board of Directors. Mathis has more than 40 years of experience in finance and accounting, mergers and acquisitions, financial controls, US government contracting, and DCAA compliance with both public and private companies.

Before retiring, he held high-level positions such as executive vice president and chief financial officer at SAIC, Amentum, ScanSource, and Force Protection.

Currently, he serves on the Board of Directors and as Audit Committee chair of ScanSource, Inc. (Nasdaq: SCSC), an IT and cloud company. Mathis graduated with a BA from Wake Forest University and an MBA from the University of Chicago.

He served in the United States Marine Corps. In 2019, Mathis founded the BRITE Kids Foundation to advance technical education in rural areas.

Source:

https://www.sri.com/press/story/charles-charlie-mathis-joins-sris-board-of-directors/

The SRI "Stanford Dish"

Part 2 The Dish Carries On

By Don Nielson[1]

Background

Following its construction in 1961–62 and after its operational genesis in 1963, the SRI Stanford Dish saw a stream of hidden government activities that not only supplied its financing, but also afforded projects lasting well into 1965. That story was covered in Part 1 of this article in the April Alumni Newsletter.

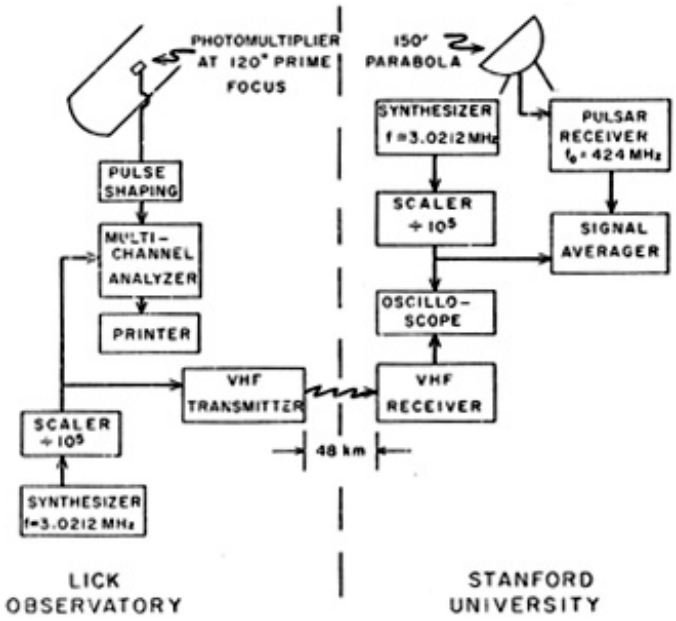
The ending of that work meant the Dish needed other purposes to avoid the fate of most of its sister SRI-built dishes constructed near the same time. Because of the uncommon capabilities it offered, together with the resourceful people at both SRI and Stanford, the Dish has survived, aided by other opportunities that have emerged, albeit sporadically. This second part of the Dish story recounts its other uses and ongoing role. Since most of that ongoing work involved a variety of projects, this part of the story is grouped into categories of use.

The first category we discuss is the Dish's use in radio and radar astronomy. While this hasn't been as prominent as Stanford would have liked, some such use came early and seemed aligned with its more academic role. The second category soon emerged as the most prominent one after the formative years of the Dish: participation in the middle phase of NASA's large Pioneer satellite program. Next, we describe the Dish's one-time involvement in an unusual communications test sponsored by DARPA. Then came the doldrums, a period of sparse use and sponsorship of work when at times the Dish seemed destined for either relocation or the scrapheap. But through the efforts of a few, the Dish was revitalized enough to bring it back into use and eventually to roles in the Global Positioning Satellite (GPS) system. We end by covering the ongoing roles that the Dish has in that most critical of satellite systems.

Radio and Radar Astronomy

Given that radio and radar astronomy was Stanford's reason behind the original venture for the Dish, one wishes for more to be recalled.[2] The venture was the Center of Radar Astronomy, started jointly with SRI in 1962. Some of the Center's many research interests were probing the solar corona, studying surface reflections from other bodies including the moon and Mars, and gathering detail about planetary atmospheres from radio occultation experiments. These last examples were made possible whenever a transmitting or receiving satellite flew behind a planet or the sun. The Dish was involved in some such experiments, mentioned in the section "Satellite Mission Participation."

Another radio astronomy use was in pulsars. SRI's Rich Ferranti said that in 1968, only a few months after they were first discovered, Stanford's E. K. Conklin and Taylor Howard used the Dish to listen to pulsars, strange clocklike emissions from identifiable sources in outer space.[3] Beyond just using the Dish alone to listen to these new phenomena, there were two instances of collaboration with other sites. One was optical, with the Lick Observatory across the South Bay, and the other was with the giant radio telescope just over 3,000 miles away in Arecibo, Puerto Rico.



Linkage between Lick and the Dish for pulsar monitoring.

In March 1968 the Dish and the Lick Observatory simultaneously received pulsar emissions from a source in the Crab Nebula. The collaboration entailed an optical reception of the pulsar at Lick that instantly triggered a signal to the Dish where it was recorded on a relatively narrow band receiver tuned to 424 MHz.[4] A similar synchronized reception of another pulsar occurred in conjunction with the Arecibo dish on April 22, 1968.[5]

Much later, over the course of the 1990s, and with considerable effort from Stanford's Ivan Linscott and SRI's Mike Cousins, the Dish's sensitivity was upgraded to that more customary for radio astronomy.[6] Linscott then used the Dish to revisit "radio stars" and also to study hydrogen clouds toward the center of our galaxy. The latter use

involved the hydrogen spectral line at 1420 MHz, near the Dish's upper frequency limit.

Satellite System Participation

The largest category of uses for the Dish has involved satellites, and within that category are roughly four classes of use. The first is direct participation in satellite missions that offered other opportunities in radio astronomy. The second is the post-launch, in situ verification or validation of a satellite's functionality and other post-launch aid. The third has to do with aiding the diagnosis of a satellite's malfunction, its operational recovery, or other rescue actions. The last category is the ongoing support of the GPS constellation of satellites.

Satellite Mission Participation

The Mariner Program

From about 1965 to 1967, an interplay occurred between the United States and Russia regarding the satellite exploration of Venus. Russia's program was called Venera, and through some auspices the Dish was used to monitor the telemetry from Venera satellites 2, 3, and maybe 4. Jeff Casper noted that these satellites had survivability problems and the Dish detected them. Venera 2 failed en route to Venus, whereas the other two, apparently unprepared for Venus's very high atmospheric pressures, failed on entering its atmosphere. Relevant to their fate, in 1967 NASA's Mariner 5, also Venus bound, was able to verify atmospheric pressures almost 100 times that of Earth. To help arrive at that, Stanford had a mission aboard Mariner 5 that enabled occultation measurements of Venus. Mariner 5 had a two-frequency receiver aboard that enabled it to probe (graze) the atmosphere of Venus and reveal its properties. Often occultation experiments involve receiving the probe's transmission. But in this case, the Dish transmitted the signal to receivers aboard Mariner 5. It was another radio astronomy use.[7]

The Pioneer Program

Another use of the Dish in direct mission support came in 1966. The project was in support of NASA's Pioneer satellite program and involved both Stanford and SRI. Lasting six years or so, the project introduced stability to operation of the Dish. The Pioneer program had three phases, and the Dish took part in the second phase, specifically associated with Pioneer satellites 6 through 9. Using heliocentric orbits, these satellites became the first to characterize interplanetary space phenomena, AKA "space weather." Among other uses, the Pioneer spacecraft's weather observations contributed to Apollo's Mission Control assessments of when missions were safe or not. Pioneer measurements eventually extended to Venus and even to the vicinity of Jupiter and Saturn.

This work began under a subcontract from Stanford to SRI, and the Dish was to make continuous measurements of what came to be known as the solar wind. That wind comprises a flow of ionized particles ejected by the sun into space, the severity of which is tied to its plasma ejections. To measure that flow, the Dish transmitted two phase-locked frequencies to an SRI-built receiver aboard each Pioneer satellite.[8] That technique enabled the measurement of total electron content between the Dish and the Pioneer spacecraft as they moved along their ephemerae. To carry this out, SRI hired Stanford students to operate the Dish around the clock.[9] Notably, the SRI-led team won a Pioneer Achievement Award from the administer of NASA for its role. That phase of the Pioneer program ended in 1972.

As a side note, I recall helping an SRI alum and member of the Palo Alto School Board bring an elementary school class to the Dish. On that day, the Dish had just contacted a Pioneer satellite as it emerged from behind the sun, over 180 million miles away! Notably, as these satellites moved behind the sun, they were also the first to also enable radio occultation measurements of the sun's corona.

A Secure Communications Link Experiment

A one-of-a kind use for the Dish arose in 1972 as DARPA chose to look into the efficacy of a new temporary secure communication link. DARPA called the effort Prairie Smoke, and SRI had a substantial role, only part of which involved the Dish. That part was led by SRI's George Carpenter. The question was whether heating a patch of the ionosphere beyond ambient conditions would offer a specialized and secure communications mode. That meant learning the electrodynamics involved as well as its radio reflection properties.

The experiment began with a vertically directed transmitter operated by the government and powerful enough to heat the upper ionosphere over Platteville, Colorado. The premise was that disturbing the ionosphere in this way would cause geomagnetic field-aligned irregularities in the patch that would provide an efficient reflection to a limited but predictable receiving area. As it turned out, although about 1,000 miles away, the Dish offered a relatively low VHF/UHF frequency radar that could be directed at least to the upper reaches of that same patch. A second powerful radar was located at White Sands, New Mexico, but signal

Radio paths used by the Dish in Prairie Smoke.

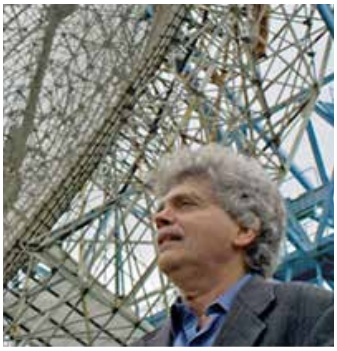
tests between those radars via the patch were unsuccessful until in early 1972 when some marginal success was seen. The only real success came in September 1973 when an SRI receiving station at Ft. Huachuca, Arizona, received the Dish's signal on both 50 MHz and 423 MHz. That site was positioned fairly well for reflection from magnetic field-aligned irregularities in the patch. While still requiring powerful transmission power, for over five days SRI measured the characteristics of that well-situated configuration.

Although the Prairie Smoke communications mode worked, its cost and the inconvenience or inaccessibility of such a midpoint probably rendered the idea impractical.

Dealing with the Doldrums

Despite some intermittent use that will be touched on later, there came a period starting in the early to mid-1970s and lasting for nearly two decades when the main story of the Dish was a drift toward obsolescence.[10] I'll call it the doldrums for the lack of financial wind needed for operational use and upkeep. Even though new satellite systems were emerging, their communications frequencies ranged too high for the mesh size and tolerance of the Dish. Add to that the increase in the man-made electrical noise environment, and getting new projects became difficult.

But here remained a rare facility. At the time, it was one of a few large movable radio telescopes in the world, it had contributed to Stanford's reputation in radio astronomy, and it cast an awesome scientifically symbolic image over a great university. That uniqueness suggested to Stanford Senior Research Associate Ivan Linscott that it was worth saving, if only for giving Stanford students some access to radio astronomy.



Ivan Linscott.

The antenna's control hardware and software needed upgrading, and something needed to be done about the increase in man-made noise at the site. With solutions in mind, Linscott approached Murray Baron, then head of SRI's Radio Physics Lab, and SRI's Mike Cousins[11] to see whether funds for revitalization could be found.

While the Dish maintained its iconic visual role in the South Bay, still beckoning strings of hikers with new trails, raising money for its rejuvenation required some heroics. The heroics started in 1989, and while many hands were lent to this process, the three major leaders were Linscott, Cousins, and the so-called "Father of the Dish," SRI's George Durfey. Let's see some of what it took to reclaim it.

Major players in the life of the Dish: George Durfey (left) and Mike Cousins.

For years the Dish had been controlled by a large but extremely limited DEC PDP-8 computer, every ounce of which's capability had reportedly been squeezed out of it earlier by Murray Baron. Replacing it with a personal computer of the day vastly improved the Dish's performance. Moreover, the Dish could now run the same code as the more modern SRI radar at the Sondrestromfjord, Greenland, field site.

But besides some structural refurbishing, the problem of an increasingly hostile electromagnetic noise environment

remained. Linscott tackled that, and it was eventually solved by a new signal processing technique developed by a Stanford student that re-enabled the reception of very weak signals.[12] In addition, to increase the sensitivity of the receiver, a state-of-the-art nitrogen-cooled front-end preamplifier of a type used elsewhere in radio astronomy was added. The ability to more easily replace the feeds for the Dish and its various uses was also undertaken. Many of these feed and receiver upgrades were to bring the Dish to the standards of radio astronomy, particularly at the upper frequencies of which the Dish was capable, around 1400 MHz. All this improved its potential for listening to radio stars, including the pulsars mentioned earlier. Then there was the painting of the now blue pedestal of the Dish, important to its iconic image.

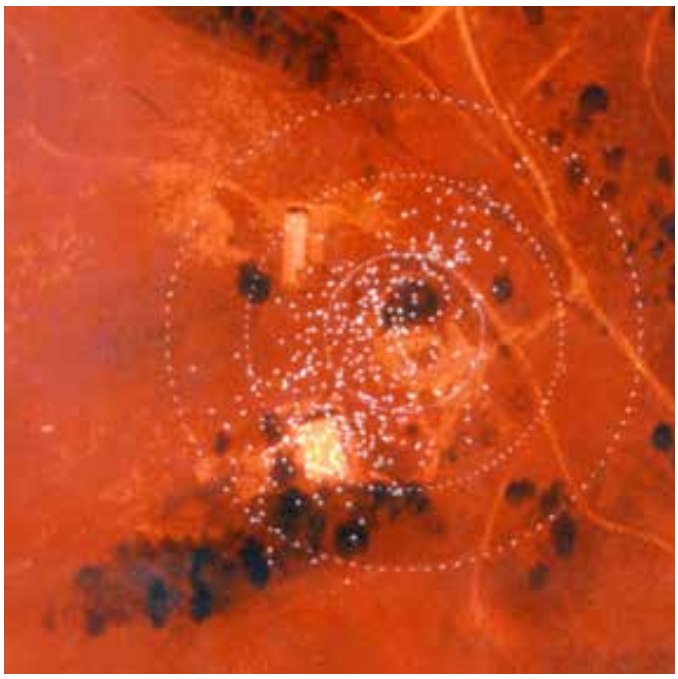
All this renovation, including prying the money loose, took time, perhaps five years or so. Still, on March 18, 1994, the cables holding the tripod feed in place broke and its point fell to the ground. It took about four months to repair.[13] But, quite incidentally, the Dish was then ready for perhaps its first involvement with the GPS constellation.

Ongoing Satellite Involvement

Satellite In-Orbit Test and Validation

The next important use of the Dish occurred in late 1994. While mostly unknown, the constellation of GPS satellites carries instrumentation called the Nuclear Detection System. Each satellite carries sensors that can detect the particle, optical, and electromagnetic-pulse (EMP) consequence of a nuclear explosion. One of the GPS downlinks, L3, is dedicated to this use. The frequency of the EMP sensors was centered in the VHF range, and while they had been individually tested on the ground, it became critical to test them, if possible, in space. Part of that reasoning was that multiple satellites were needed to pinpoint where a single detonation occurred. So, a problem arose: How to simultaneously engage multiple GPS satellites with the same signal and powerfully enough to emulate a nuclear EMP?

The sponsor, the Air Force Space and Missile Command, facilitated bringing the right transmitting equipment to the Dish. After a couple of tries, a very powerful pulse emitter in the VHF range was found that enabled the Dish to launch a very short duration pulse, powerful and directed enough to activate the EMP sensors—but only one satellite at a time, not enough for triangulation. A workaround was fashioned that could emulate simultaneous receptions from a single source, the Dish, if the timing of each individual satellite transmission could be measured to nanosecond accuracy. So in addition to the pulse generator, a special high-voltage coaxial cable, and a feed horn to drive the Dish, a GPS receiver had to be obtained to record exactly when the pulse left. All that was worked out, and the Dish began its mission pinging separate satellites whose recordings were brought together after the fact. The Dish fired 300 "shots" at four different GPS satellites on both October 9 and 16, 1994. The shots were combined at Los Alamos National Lab, with post-processing showing the Dish as the indicated source of the simulated "explosions." The photograph below shows the result, where each shot is represented by one dot. SRI's George Carpenter led the project, with Phil Bentley designing the horn feed and fielding the necessary equipment.



Calibration data on the GPS calculated source of the EMP pulse. The outer ring is 300 m away from the Dish.

Unfortunately, this success was short lived. The FAA feared that the danger of placing such powerful emissions through the South Bay flight lanes, even in the middle of the night, was still too risky for a second test, scheduled for 1999. Hence, the test was moved to a similar, more remote antenna in Canada.

Mars Rover Communications

Because of their small size, Mars land rovers have difficulty communicating their observations directly to Earth. The solution is to use a relatively low frequency (UHF) for a short hop to an orbiting relay satellite that then beams it to Earth using a very much higher and more directed frequency It was desirable to test these UHF relay transceivers, first en

route to Mars and, if possible, when they were in orbit. The Dish was called on to do just that.

The first such instance came in 1996 as the orbiting Mars Global Surveyor (MGS) headed for Mars and was "only" a million miles away. As stated, one of the modules aboard the otherwise observational satellite was to serve as a relay of the UHF signals from rovers on the planet's surface. Mike Cousins reported that in November 1996, they were able, after overcoming some interface issues, to contact the MGS on two frequencies and two polarizations. In this instance, the Dish essentially took the place of a rover and the MGS relayed the Dish's input to the Jet Propulsion Laboratory (JPL) Goldstone receiver. Even more remarkable, Mike reports that a couple of years later, on November 3–4, 1999, and with the MGS relay satellite in Mars orbit, the Dish interacted with its 1-Watt UHF beacon from 230 million km away! This was a record for UHF transmission distance and an indication that the MGS was ready for serving ongoing Martian rovers.

SRI's Jeff Casper related similar and later use of the Dish's UHF capability. In May 2018, NASA launched another mission to Mars where the main component aboard was a Martian lander called InSight. Also aboard were two small communications relay satellites from JPL that would, as did the MGS, orbit Mars and act as relays from the lander back to Earth. They were from a rather inexpensive family called CubeSats, in this case named Mars Cube One or MarCOs. The JPL wanted to test these satellites before they were deployed.

The Dish as used the night of the MarCO test.

SRI and the Dish were again called on to perform those tests while the MarCOs were en route to Mars! SRI's contract involved readying the now decade-old UHF klystron transmitting tube housed at the base of the Dish, fabricating a horn feed equipped for right and left circular polarizations, and then attempting the transmission to the onboard MarCOs fairly early in their flight to Mars.

After thorough preparation and testing of the setup, on June 14, 2018, a 10-kW signal, using modulation provided by JPL, was sent. The MarCOs responded and relayed their information to their NASA ground stations. The distance was over 2 million km. This test was repeated on June 18 at a distance of 10 million km, and both exercises were successful. Accordingly, SRI prepared for a third test, still farther away and using 30 kW, but JPL canceled it because preparation time for the landing itself took precedence.

Satellite Rescue and Observation

Another class of satellite work has to do with aiding in either the diagnosis of a satellite's malfunction or its operational recovery. Since none of these rescue missions have been lengthy and occurred over an extended period, they are summarized here in chronological order.

OGO – 1965. Starting in around 1964 and continuing into 1965, NASA sponsored some telemetry work at Stanford involving the OGO satellite series. OGO stood for Orbiting Geophysical Observatory, and its satellites were designed to study the Earth's magnetosphere. The program ran for well over a decade, but the SRI participation was, I believe, just early on, verifying the satellites' telemetry functions.[14]

Voyager – 1978. The Voyager Program was designed to collect scientific measurements on fly-bys of the huge gaseous and ice planets of our solar system: Voyager 1 concentrated on Jupiter and Saturn and Voyager 2 on Uranus and Neptune, all very far away. Their launches occurred in 1977, based on a favorable alignment of the outer planets. On its way, Voyager 2 developed radio problems on both primary and backup receivers that threatened its mission. Several ways to remedy this were posed, and one involved the Dish. If the main receivers wouldn't work, could a receiver on one of the onboard experiments be used to pass reprogramming instructions to the central Flight Data System? The answer was yes, and beginning on September 13, 1978, the Dish threw 300 kW at the separate planetary radio astronomy (PRA) receiver at its frequency of 40 MHz. Perhaps because of modulation difficulty, the signal level was less than desirable, but the test was successful and the PRA receiver rebroadcast the output to its experiment team at the University of Colorado. The test was repeated the following month, but then the transmission coaxial cable to the Dish failed. Upon further examination, switching to a permanent

VHF solution was determined to be too expensive and time consuming. In the meantime, another method was used to restore the main receivers.[15]

OSCAR – 1982 and 1990. The University of Surrey in England had a long-term program for launching small communications relay satellites, two of which met trouble and were salvaged with the help of SRI and the Dish. The first instance was in April 1982 when the downlink transmitters on their first satellite, UoSat 1, became locked on, blocking the receipt of uplink commands. SRI solved the problem by blasting a huge signal at the satellite to turn off its transmitters. The satellite went on to an eight-year lifetime.[16]

The second incident occurred in 1990 and involved UoSats-OSCAR-14 and -15. In their early orbits, the satellites worked fine but after a day or so both ceased to function. After trying for months with no avail, the University of Surrey team again came to a set of hams at SRI asking for help. On September 20, 1990, the SRI crew, using some "sophisticated digital processing equipment," tried to listen for the satellites' oscillators.[17] They could hear 14's but not 15's. The result was that 15 didn't survive but 14 did and served long as a ham packet satellite relay!

Cal Poly's ExoCube – 2015. A very typical rescue mission involved another university whose command links to its small satellites weren't adequate. Cal Poly's UHF antenna on its satellite didn't deploy, and the mission team wanted the Dish to overcome that imposed signal loss. The attempt was made, but the antenna still failed to deploy; so, with funding from NSF, the Dish provided the communication link for several weeks thereafter to enable ExoCube to complete its mission successfully.

SRI continues to receive occasional requests from universities for assistance with their small experimental CubeSats. As was the case with Cal Poly, it usually involves communicating with their transceivers as the Dish also tracks their satellite.

The Dish and the GPS Satellite Constellation

As we have seen, the Dish has supported a variety of satellite systems, but the most prominent and certainly the most current is its role in the GPS system. Here are some examples of how, through that involvement, the Dish is serving us all now, more directly than ever.

In early 2009 was one very important instance where the Dish was used to verify the initial use of a new and vital GPS broadcast downlink. That frequency or channel was called L5, and for more than a decade it had been targeted by the United States for civilian transportation safety, particularly for global commercial aviation navigation. Back in 2002, the issuing authority, the International Telecommunications Union (ITU), had set a date for consistent use of L5 by August 2009. Failing to meet that deadline meant the channel would go to China for another purpose. But L5 was scheduled for the next generation of GPS satellites that were to launch beyond that date. So, to meet the 2009 deadline, the US decided to put an L5 transmitting module aboard the next-to-last launch of the existing generation satellite, SVN 49, scheduled to go into orbit on March 24, 2009. The Dish, along with a couple of other receiving sites, was selected to receive the first L5 transmission, which was set for the night of April 10, 2009.

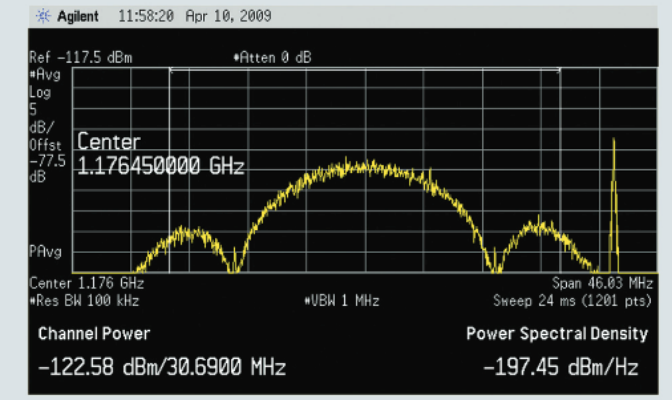


FIGURE 10 The L5 spectrum captured by the SRI 45.7-meter dish antenna. The large size of the dish reflection area provides an antenna gain as high as 52 decibels, which boosts the L5 signal high above the noise floor in frequency. A clear L5 spectrum with the main lobe and two side lobes are shown. Figure courtesy of Mike Cousins and John Ciboci, SRI International.

The first recorded spectrum of the GPS L5 downlink in April 2009.

During that night, a large assemblage of visitors from the Air Force GPS Wing, GPS contractors, the FAA, and others squeezed into the small housing beneath the Dish, all awaiting the clear reception of the new L5 signal. When L5 was switched on, the spectrum shown here immediately appeared.[18] Because the Dish had the largest gain of the few observing sites, that recorded spectrum was used to file successfully to the ITU.

Although it had no bearing on the filing, there were attendant problems with SVN 49's signals. It turned out that in lashing the L5 transmitter onto SVN 49, its location aboard caused some multipath within the satellite's antenna array that affected its primary navigation frequencies, enough so that SVN 49 was never brought into service, sort of a critical sacrificial existence. As Gary Okerson, the SRI

team leader, put it recently, "Losing L5 to China would have cost us billions, so a $200 million satellite is a small price to pay." The next generation of GPS satellites had L5 properly integrated, and your commercial airline flight today is the safer for it.

Finally, the other aspect of SRI's GPS role is its ongoing service to changes in the GPS constellation. Here is an outline of that role from SRI's Jeff Casper:

- When the first satellite in a new generation or variant of GPS satellites is launched, the Dish often collects detailed GPS signals to assist in verifying the proper functioning of the satellite. For example, GPS IIIF is schedule to launch in late 2026.
- If a GPS satellite appears to have an anomaly, the Dish may collect detailed GPS signals to assist in analyzing the situation so the satellite can be returned to proper operation.
- When US Space Force wants to evaluate potential changes to an on-orbit satellite, such as output power adjustments, the Dish may be called upon to collect resultant data.
- The Air Force Research Laboratory is scheduled to launch an experimental Navigation Technology Satellite, 3 (NTS-3), in late 2024. This satellite will test new concepts for augmenting the GPS system. The Dish is expected to support some of the NTS-3 experiments in 2025.

The Future

The future of the Dish obviously relies on the upkeep and improvement of its aging structure and the ingenuity of those whose responsibility it is to find uses for it. Regarding the former, there are plans to repair some of the spars and even replace the surface mesh. If you wonder about refining the mesh to enable its use at higher frequencies, such an upgrade is unlikely because of the wind loading on its support structure. In any case, there are ongoing uses for the Dish, undergirded by some consistent government interests.

Beyond those mentioned, here are a couple more. When the Arecibo antenna fell to hurricane damage in 2021, the Dish was reactivated to show NSF it could resume its pulsar recordings. Furthermore, a role is being sought in the upcoming Artemis moon landing program. These initiatives seem to stem more from SRI than from Stanford at the moment, but that may well change.

The main operation of the Dish lies in the hands of SRI's Steve Muther[19] and Jeff Casper, who are managing its ongoing projects. Both were so hospitable in giving me both information and insight. In the meantime, the Dish will hopefully remain familiar far beyond what is reported here. It's hard to see it fading from view!

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1. This account could not have been written without the help of those who were intimately involved in the life of the Dish. They are George Carpenter, Jeff Casper, Mike Cousins, Rick Ferranti, Steve Muther, and Gary Okerson. All are hereby gratefully acknowledged.
2. More almost certainly lies in the dozen or so logbooks for the Dish that have yet to be adequately explored.
3. Pulsars are thought to be very small rapidly rotating neutron stars.
4. https://ntrs.nasa.gov/api/citations/19690018062/downloads/19690018062.pdf.
5. E.K. Cohklin, H.T. Howad, H.D Craft, and J.M. Comella, "Simultaneous Observations of a Pulsating Radio Source over a 5,000 km Baseline, *Nature*, 21 September 1968.
6. The necessary upgrades are described in the section "Dealing with the Doldrums."
7. See https://space.stackexchange.com/questions/30346/when-did-planetary-scientists-realize-venus-surface-pressure-was-almost-100x-th.
8. One was 423.3 MHz and the other 49.8 MHz, the higher one serving as a modestly affected baseline for the lower one's high sensitivity to ionization content. Both were near the lower end of the Dish's frequency range.
9. One of those students was Mike Cousins who, after graduating, would join SRI and become a "Steward of the Dish," responsible for managing it and coordinating the projects using it.
10. In "New Life for an Old Dish" appearing the April/May 1996 issue of ERGO, an internal SRI publication, Mike Cousins placed the duration at 17 years. But in "What a Dish" in the December 1995 issue of *Stanford Magazine* (pp, 54–57), Mike Oneal pegged the disuse from the mid-1970s to 1995.
11. Mike Cousins had watched construction of the Dish with interest. While a graduate student at Stanford and with keen interests in its radio science research, he worked temp hourly as an operator of the Dish starting in July 1970.
12. The same 1995 *Stanford Magazine* article mentioned that a processing algorithm was derived by PhD student Mitch Oslick, with help from Snezana Maslakovic, that could be encoded on an ultra-fast processor capable of real-time operation.
13. *Stanford Magazine*, July 2018.
14. This, along with so many other uses, is only briefly mentioned in the logbooks of the Dish. Those records have not played any other part in this story, and one wonders what is left to be discovered if those books could talk. Hopefully, we can find some way to at least digitize them and a much more complete history of the Dish will ensue.
15. R.M. Dickinson, *DSN VHF Transmitting Array Backup Command Uplink for Voyager 2*, Jan/Feb 1979, found at https://ipnpr.jpl.nasa.gov/progress_report/42-50/50Y.PDF. Also, see Andrew J. Butrica, Voyager: *The Grand Tour of Big Science*, Chap 11, Footnote 79, NASA, 1998.
16. See https://space.skyrocket.de/doc_sdat/uosat-1.htm. This series of satellites were used by radio amateurs who called them OSCARs. The first was launched in mid-1981.
17. See www.spacetoday.org/Satellites/Hamsats/Hamsats1990s/Hamsats90sUoSATs.html and *SRI Journal*, November 1982.
18. https://web.stanford.edu/group/scpnt/gpslab/pubs/papers/Gao_InsideGNSS_MayJun_2009_v6.pdf
19. If you'd like to watch a video made by a guest blogger at the Dish with a view inside the control room, dialogue with Steve Muther, and a "dance" of the Dish, please visit https://www.youtube.com/watch?v=Zj3ZuphVxsE.

Spring Fling at the San Mateo County History Museum

The 2024 Spring Fling was held at the San Mateo County History Museum located in downtown Redwood City. Housed inside the former courthouse built in 1910 for the San Mateo County Superior Court, the museum showcases the rich history of San Mateo County and the surrounding area. About 50 people attended to enjoy a free lunch, conversation, and a tour of the museum.

Thanks go to Augustina Biosic, Dave Harvey, Linda Jansen, Don Nielson, and Don Shockey for organizing and facilitating the event and to Gary Bridges for event photography. More photos can be seen at https://garybridgesphotography.pixieset.com/srispringfling16may/.

From Education Research to Diverse Ventures

by Naa Evans

When I joined the Education Division in SRI's Menlo Park office in January 2015, I moved to California sight unseen. After teaching middle school English, completing a master's in education policy, and working in the central office of a school network, it was my first full-time foray outside a purely academic institution.

During my trial run taking Caltrain to experience my new commute from Sunnyvale to Menlo Park, the detail that struck me the most was the sheer number of palm trees along the route. After a life primarily centered on the East Coast, I could not have imagined that my first exposure to the West Coast would remind me of living in West Africa. Yet that small surprise of palm trees was merely the beginning of the new experiences in store.

My four-year tenure at SRI changed my life in ways I did not anticipate. There were certainly the personal impacts, like meeting several people who have become my dearest friends or realizing that I am not a West Coast person. (Once my smallest-budget California projects were complete, I moved back to the East Coast to work out of SRI's DC office.) More salient to this alumni community, I would like to share how the knowledge, skills, mindsets, and networks I built at SRI transformed my professional trajectory.

Research Methodologies and Project Management

As a research analyst II and education researcher in SRI's Education Division, I had the privilege of working on a variety of projects aimed at improving K-16 education systems. Over the years, I participated in formative research, programmatic evaluations, and technical assistance for a range of clients in California and across the country, focused on critical issues varying from STEM (science, technology, education, and mathematics) education to college and career pathways and from educator preparation to teaching quality. I led teams to develop research questions, analysis plans, and data collection instruments and conducted countless interviews, focus groups, and classroom observations. While learning about data tracking systems and data security practices, I collaborated on mixed-methods and integrated analyses that led to dozens of client deliverables, several published reports, my first conference presentations, and even peer-reviewed research. These experiences and more provided a solid foundation in research methodologies and project management, skills that have been instrumental throughout my career.

Relationships and Support

Early in my SRI tenure, the principal investigator and project director of the evaluation of the National Writing Project's Inquiry into Science Writing Project (nicknamed SEED Science after its funding source) invited me to take on my first project management role. Then, when the study's project director transitioned to another research institute, I took over her role on the leadership team. Thanks to these two colleagues, I not only learned the ropes of leading a multiyear evaluation and the associated client relationship, but also how to create a scaffolded stretch opportunity. The skill of supporting a colleague's growth is one I have used in every professional context since.

Through the Next Generation of Educators Initiative, a project funded by the S. D. Bechtel, Jr. Foundation to support reform of teacher preparation programs across several California State University (CSU) campuses, I learned how to provide value-added technical assistance to faculty who had far more professional experience than I, while building an incredible network of educators, funders, and researchers.

From evaluations of various California college and career readiness programs, I picked up new skills in quantitative, qualitative, and mixed-method analyses.

Technical considerations aside, interorganizational politics of some studies were trickier than others. Those projects bore struggles, and occasional failures, that were also opportunities to learn—about seeing the bigger picture, navigating complex relationships, and building trust among stakeholders.

Although my formal employment with SRI ended in December 2018, the affiliation continued informally until July 2021, when *Teachers College Record* published our SEED Science case studies of professional learning in evidence-based science writing. At times, it felt surreal to continue analysis and reporting on our research long after I no longer considered myself an education researcher.

Transition to Other Organizations

The expertise I developed over the course of my experiences at SRI set the stage for my transition from research to venture philanthropy. In late 2018, I joined Education Forward DC, a nonprofit funding organization that supports and advances high-quality and equitable educational experiences that ensure every DC student thrives. In my role as a manager of talent investments, the lessons I had learned from SRI's formative evaluations of education initiatives guided my researched-informed contributions to investment strategy planning and due diligence processes. Additionally, my experiences providing technical assistance to CSU teacher training programs enabled me to easily transition to supporting a range of local, regional, and national talent portfolio grantees with programmatic management assistance, while also reinforcing Education Forward DC's relationships with foundations and organizations that had previously been my clients at SRI.

Time and again, I received opportunities and responsibilities that peers with similar Ivy League backgrounds and classroom-based career roots could not access. In part, I attribute this to the proficiencies I developed as an education researcher. SRI was a training ground to master the nuances of impact in the education sector and furnished proof that I could thrive when granted significant responsibility.

Later, as a senior manager of schools and talent investments, I developed and led a $6 million investment strategy focused on school-based mental health (SBMH) in the District of Columbia. Conducting formative evaluations had taught me how to quickly learn the lay of the land to build credibility with project stakeholders. That skill came in handy with Education Forward DC's SBMH strategy. Despite having no prior experience leading a strategy of this magnitude or working on this specific topic, I established myself as an expert and trusted local resource. Fortunately, years of navigating tricky institutional relationships also served me well while bringing together fellow funders and partners around a shared long-term vision for student well-being in DC.

In 2022, at the invitation of a former SRI colleague, I transitioned to Twitter to lead a scope expansion of its annual corporate reputation study from two countries to seven. Later that year, after the company's leadership change, the market insights and analytics division was largely eliminated. However, in the intervening months, my team managed to pull off the full life cycle of this extensive research project, offering timely consumer insights research and strategic guidance to global and US communications, marketing, partnerships, and public policy teams at Twitter.

Thanks to years of conducting rigorous research projects at SRI, it was easy to quickly pick up new methodologies and orient myself to the theoretical frameworks underlying corporate reputation research. The literature review skills I had refined in my first year as an SRI research analyst also helped me quickly get up to speed with the social media policy and corporate reputation issues under study in each region. Building from experiences of managing project teams, subcontractors, and budgets, at Twitter I also managed vendors to ensure high-quality research outputs. Although both the role itself and the use of our research projects were ultimately short-lived, I still take immense pride in being able to apply the professional foundations I developed at SRI Education to the field of corporate reputation.

Setting New Priorities

The impacts of the pandemic led me, like many people, to spend the past few years reconsidering my personal and professional priorities, as well as my desired impact in the world. In addition to wrapping up a graduate program in library sciences, currently I am the founder and owner of Kingo Games LLC and Kingo Brands LLC. Established in 2022 and 2023, respectively, these ventures share a common vision of encouraging creation of, and engagement in, communities of joy. Through my concierge librarian service (https://kingocrown.com/), I offer families personalized support for their teenagers' information and entertainment needs, beyond academics. Our K-Drama Bingo (https://kingogames.llc/#kdramabingojournal) brand celebrates community among fans who love Asian dramas, while Wine Things Co. (https://kingobrands.com/#ourbrands) offers cheerful gifts for people who enjoy wine.

Each of these ventures has steadily growing public-facing elements, as well as services, products, and partnerships that are still under development. My days as a business owner are quite diverse, whether I'm working with attorneys to protect intellectual property, collaborating with global partners on market research or product design, managing multichannel marketing and commerce strategies, or honing other business skills. Over the past few years, I've learned how the combination of flexibility and follow-through required for successful research projects is quite transferable to entrepreneurship, too.

My journey from SRI Education to my current entrepreneurial ventures has been marked by continuous

adaptation and learning. The invaluable skills, knowledge, and mindsets developed while spending my late 20s working at SRI provided a solid foundation for my subsequent roles, positioning me for more influence and helping me navigate complex challenges in various sectors.

SRI is well known as an institution with the potential to serve as a lifelong professional home. Yet it can also have a lifetime impact even for those of us who move on. I am grateful for the opportunities I had and the people I met while employed at SRI and look forward to continuing to apply my expertise to drive positive change and innovation in my current and future endeavors.

Alumni News

SRI Alumni Association members are invited to attend the annual reunion in Menlo Park on October 3, 2024. It will be held in the International Building from 4:00 until 7:00 p.m. The program will include a report on the status of the Institute by SRI's CEO David Parekh, a technical presentation, and a possible Alumni Hall of Fame induction. You can count on sumptuous hors d'oeuvres, excellent drinks, delightful conversation, and plenty of door prizes.

This year the reunion is again free of charge for one alumni member and one guest. Your additional guests are welcome to attend at a charge of $25 each. As an added bonus, paying guests who are former SRI employees but aren't currently members of the association will have their entrance fee go toward one year of association membership.

An invitation to the reunion with sign-up form is included with this mailing; members receiving electronic distribution will need to print the sign-up form from their email attachment. Please complete the form and return it with your details and payment for any additional guests by Friday, September 27.

The SRI Alumni Association welcomes new members:

Steve Baughman
Denise Cardoso
Mike Cohen
Richard Heinz
Scott Stanford
Israel Torres
Cyndi Williamson

And welcomes back previous member:

Jacqueline Owen

We look forward to your participation in the Alumni Association and hope to see you at our next group event.

Alumni Association Membership Renewals Due by November 30

It's almost time to renew your SRI Alumni Association membership for 2025. Membership renewal forms will be mailed to association members in **mid-October**. The fee is $25 per member, due by **November 30, 2024**. All members who renew on time will be included in the 2025 Alumni Directory, which will be issued in January.

Who Do You Believe Made an Exceptional Contribution to the Success of SRI? Nominate That Person for the SRI Alumni Hall of Fame!

The SRI Alumni Hall of Fame honors former staff members who made exceptional contributions to the success of SRI.

All former staff members are eligible, but nominees should meet the following criteria:

- Significant, lasting contributions to the success of SRI
- Contributions recognized by staff, management, or clients
- Contributions in any area of research, management, or service, such as
  - Establishing a new laboratory or a new field of research
  - Performing an outstanding recognized service
  - Clearly demonstrating qualities of leadership, vision, and creativity
- What did the person leave behind?
  - Enhanced reputation for SRI
  - New or enhanced research, business, or support activity or facility.

Please prepare a write-up of about 300 words indicating how your nominee meets these criteria. If you have questions about the nomination process, members of the Steering Committee will be happy to answer them. Send the write-up or questions to steering-committee-alumni@sri.com or SRI Alumni Association, 333 Ravenswood Avenue, AC-108, Menlo Park, CA 94025-3493.

The distinguished inductees are further honered by having their names engraved on brass plates permanently displayed on a wooden plaque in the I Building foyer. Current-year inductees also have their framed citations and photos mounted next to the wooden plaque (see photo below).

Credit Union News

Rosalind Joyce Berry*

Joyce Berry died peacefully on June 17, 2024, at age 91 after battling pneumonia. Joyce had a notable 32-year career at SRI and was a key contributor to the SRI Alumni Association for years thereafter.

Joyce was born on October 22, 1932, to Frank and Mary Alviso. Her mother died when Joyce was only 4 years old, and because her father was unable to care for Joyce and her two siblings, they were raised by their grandmother, with the help of Joyce's three uncles. She grew up in Hanford, California, and graduated from Hanford Union High School and the College of the Sequoias (COS) in Visalia, California, with a major in commercial art. Joyce was the sports editor for the yearbook, a pep girl and song leader, a member of the football queen's court, and Commissioner of Arts during her two years at COS.

Joyce met her husband, Don Berry, at a Valentine's dance at COS. They were married in 1954 just before Don headed to San Jose State College to run cross country there. After Don graduated, they moved to Sanger, California, where Don was a successful track and cross country coach and teacher and Joyce worked for Brunswick Drug Company. In 1964, they moved to Belmont, California, where Don taught and coached at Carlmont High School. Several years later, they moved to Half Moon Bay, California, where they remained until 2010, at which time they moved to San Jose, California.

In 1965, Joyce started work at SRI as a report typist and later became a report coordinator for Poulter Laboratory. In 1977, she became the supervisor of the centralized Technical Illustration group. After the group was decentralized in 1978, Joyce became the supervisor of the Physical Sciences Division Report and Proposal Service and was also asked to resume her role as Poulter Laboratory report coordinator, positions she held until her retirement in 1997. Joyce's superior organizational skills and multiple other talents were invaluable in expeditiously producing accurate reports and proposals. Her work ethic was highly valued by the report authors and resulted in reports that received regular accolades from SRI clients.

As a member of the steering committee for the SRI Alumni Association, Joyce not only maintained all the membership records, but also wrote a Membership Data Manual, which proved helpful when she was training her replacement. Joyce designed and assembled the Association's newsletter from 2001 through 2009. Her leadership at the annual reunions, Spring Fling events, and Hall of Fame awards was impressive and contributed to their success. In all she did, Joyce set a standard of excellence for those who follow her, and in 2020 Joyce was inducted into the Association's Hall of Fame.

In both her work and personal life, Joyce was dedicated to her family and friends. She and Don were proud parents of son Richard and daughter Janet, both of whom were heavily involved in school activities such as Future Farmers of America, the Half Moon Bay Los Caballeros Drill Team and Color Guard, and the San Mateo Country Fair. The family spent every weekend from May to September and two weeks in the summer camping in the Sequoia or Kings Canyon National Parks. Wherever Don and Joyce lived or worked, they made lasting, close friends with whom they shared community projects, social gatherings, and a special interest of theirs—sports. In addition to attending 49er games, Joyce kept Don busy with her love of baseball and the San Francisco Giants. As the Activities Coordinator at SRI, she created lists of entertainment activities that were enjoyed by many.

As Joyce and Don's children married and had families, they traveled many miles up and down California to attend their grandkids' events and developed lasting relationships with all of them.

Joyce was preceded in death by Don, her husband of 62 years, in 2016. Joyce is survived by her son, Richard Berry, and daughter, Janet Mills; six grandchildren; and 11 great grandchildren. Joyce was deeply loved by them all and was a beloved colleague and friend to many at SRI and will be missed.

Based on an obituary provided by Janet Mills and the SRI Alumni Association's Hall of Fame profile.

John Howard Bryan*

John (Jack) Howard Bryan died peacefully on April 6, 2024, after a life full of good books, innovative science, and steadfast devotion to his family. He was 93 years old.

Jack was born on July 5, 1930, to John Henry Bryan and Ruth Neff Bryan at LDS Hospital in Salt Lake City, Utah. He grew up with an older sister, Naomi, and a younger brother, Robert. In the winter of 1932, the family moved to England. They lived in Brentwood in Essex and Newcastle-upon-Tyne until 1935, when they returned to Salt Lake City. Jack attended Lowell Elementary School through fifth grade, changing to Sherman School when his family moved to East Mill Creek, Utah. He attended Irving (now Olympus) Junior High and Granite High School, graduating with the class of 1947. During his high school years, Jack delivered the *Deseret News* and worked as a butcher's assistant.

After graduating from high school, Jack worked briefly at Equitable Life Assurance Society and then attended the University of Utah, studying electrical engineering and working on the university's literary magazine, *The Pen*. After his junior year, he transferred to Stanford University to concentrate on electronics, aided by a Henry Newell scholarship. Graduating with distinction in 1951, Jack worked in the Maintenance Engineering Department at Hill Air Force Base during the following summer as B-26s and B-29s from the Korean campaign were being serviced.

Jack started graduate school at Stanford in fall 1951, completing a Master's degree in 1953. At the same time, he started working part-time at SRI. This was the beginning of a career with SRI that spanned more than 50 years, interrupted only in 1953, when Jack was drafted into the US Army near the end of the Korean War. After completing basic training at Fort Ord, California, he was assigned to Fort Monmouth, New Jersey, where he completed his two-year tour of duty working at Evans Signal Laboratory, in the Antenna and Microwave Circuitry Section of the Radar Development Branch. He was discharged honorably in January 1955, holding the rank of corporal. Jack returned to full-time work at SRI while continuing with further graduate studies. In 1960, he earned the degree of engineer (Stanford's "professional" degree); his thesis was titled, "The Effect of Receiver Nonlinearity on Clutter Cancellation in an MTI (Moving Target Indication) Radar."

In 1962, Jack met Catherine (Cathy) Peterson, a Stanford speech therapy graduate student from Fairview, Utah, and they were married at Cathy's home in Fairview. In 1964, they moved from their apartment in Menlo Park, California, to a home they bought in Newark, California. They lived in Newark for nearly 40 years. Their three children—John, Sarah, and Mary Catherine—were born in 1965, 1969, and 1973, respectively.

While Jack was working at SRI, he produced numerous classified technical reports, presentations, and papers, leading his family to wonder what he really did at work. His thorough attention to detail, clear communication, and frank assessment of his results drew numerous commendations from clients and ensured a steady stream of work coming his way. In addition to his work for clients, Jack was involved in the Institute of Electrical and Electronics Engineers, serving for a year as chairman of the Bay Area group on "Systems, Man, and Cybernetics," where he was able to meet and learn from a number of outstanding fellow engineers from the Bay Area. After five decades leading groundbreaking electronics projects and solving difficult problems in emerging military technology, Jack retired from SRI in 2002.

While Jack and Cathy lived in Newark, Jack was active in the Church of Jesus Christ of Latter-day Saints, serving in educational and leadership roles. His favorite callings were Scouting Coordinator and home teacher. He loved joining the lads and other scouters on outings in the Pacific Coast Range and the Sierra Nevada. Jack was also a devoted father who gently shared his love of language, science, and thoughtful spiritual living with his children (and anyone who had a spare moment). Through his example, he taught his children the importance of living with charity, integrity, and humility.

After retirement, Jack and Cathy moved to Holladay, Utah, a few miles south of the East Mill Creek home of his adolescence. Jack enjoyed traveling the world with Cathy, attending University of Utah athletic events, and doting on his grandchildren and supporting their wide-ranging pursuits. Jack was naturally curious and interested in learning from everyone he met. He was gentle and kind, always eager to think the best of others.

Jack was a beloved husband, father, and grandfather. He is survived by his wife, Cathy; children, John Bryan, Sarah Gwilliam, and Mary Catherine Perry; 13 grandchildren; and brother, Robert. He was preceded in death by both parents and by his sister, Naomi, in May 2007.

Based on obituary published online by Dignity Memorial.

Lambert Tyler Dolphin, Jr

Lambert Dolphin died in Santa Clara, California, on January 1, 2024, after a brief illness. His body was laid to rest in the Purissima Cemetery in Half Moon Bay, California.

Lambert was born in Shoshone, Idaho, on May 24, 1932, to Lambert and Audrey Dolphin. Lambert acquired the nickname "Skippy" from his mother and used this nickname or "Skip" throughout his life. Lambert's parents separated when he was 12, and he moved with his mother and sister, Susanne, to San Diego, California, during the early years of World War II. Two years later, Lambert's mother died of kidney disease at age 39.

Lambert was voted "most likely to succeed" in high school. He received an AB degree with high honors in physics and distinction in mathematics from San Diego State University in June 1954. Lambert's academic prowess kept him from going to war as his professors wrote letters to the draft board that his potential in math and physics was worthy of keeping him in school. His professors also wrote recommendations to Stanford University for graduate school.

After two years of graduate study in physics and electrical engineering at Stanford (1954–56), Lambert joined the staff of the Radio Physics Laboratory (RPL) at SRI in Menlo Park, California, where he remained almost continuously for the next 30 years. He bought a house in Cupertino, California, and later relocated to Santa Clara, California, where he lived until his death.

During his early years at SRI in the late 1950s and 1960s, Lambert's work involved using various electrical engineering systems and hardware such as pulse generators, transmitters, and radars. Many projects were performed aboard a specially outfitted ship, the *Michael Victor Acania*. The *Acania* had been built for actress Constance Bennett in 1929. After its "remodel," it served as a platform for SRI to monitor US nuclear detonations at Eniwetok Atoll and Johnston Island in 1957 and 1958. Later the *Acania* served as a platform to collect missile-launch phase ionospheric data at Cape Canaveral and reentries at Antigua, among other locations in Florida, the Caribbean, and Samoa. Other assignments took him to Alaska. About this same time, Lambert developed an interest in spark transmitters, using large Tesla coils; on occasion, these led to miniature lightning bolts being generated in Building 44's high bay, which were dubbed "Lambert's Christmas lights."

In the early 1970s, rather than looking toward the ionosphere and outer space, Lambert, along with other SRI staff, focused on using ground-penetrating radar to investigate areas in and around the pyramids in Egypt in 1974, 1976, and 1978; mines in California and Nevada; and ancient shipwrecks. During this time, it is said that Lambert once picked up Steve Jobs while Steve was hitchhiking to the University of California at Berkeley, which led to a long-term friendship.

Lambert was also a bit of a prankster and penned a very humorous accounting of the RPL and his fellow scientists and projects over the years. At the same time, he started building what became an extensive website at https://www.ldolphin.org/, a task on which he spent increasing amounts of free time until his death. Anybody who wrote in with a comment or question received prompt, personal help from Lambert, whether it was a question on physics, social problems, or Christianity.

Lambert left SRI as a senior research physicist in 1987 to pursue independent geophysical consulting services and Christian teaching, writing, and counseling. This work involved extensive travel, including visits to Israel nine times. Lambert was a member of the Peninsula Bible Church in Palo Alto, California, and started Lambert Dolphin Ministries under his website to house records of his life experiences and bible studies. In the last few years, he sent daily email "newsletters" that were based on scripture with life applications.

There are many people Lambert touched, as he unselfishly devoted his time and energy to anyone who came to visit him. He was always cheerful, optimistic, and saw the potential greatness in everyone.

Based on an obituary by Matt Podoll published by Palo Alto Online *and an obituary provided by Patti Burns that was based on (1) text from Lambert's* Celebration of Life *on February 24, 2024, at the Peninsula Bible Church, (2) information from Lambert's "True Story of the Communication and Radio Physics Lab of the Stanford Research Institute (A Parody)," and (3) contributions from Dr. Roger S. Vickers.*

Lucia E. Gegan

Lucia (Lucy) Gegan, 82, of Menlo Park, California, who brought sunshine and a love for the arts to everything she did, died peacefully on July 12, 2024, with her brother Ron, sister Lillian, brother in-law Joe, daughter Lauren, and dog Daisy beside her. She was active up until the week before, going out to dinner and always having a glass of her favorite red wine.

Lucy's passion for art began early in her life. One of her first jobs was at the esteemed De Young Museum, where she was surrounded by beauty. Later, she and her husband, Michael, shared their love of art and history as docents at the stunning estate and gardens of Filoli.

Her professional life thrived at SRI where she excelled as an executive assistant. After work, she could usually be found basking in the sun on the back patio of Rossotti's Alpine Inn with her colleagues, always engrossed in lively conversations and eagerly willing to debate with anyone who dared disagree with her until she'd won them over.

Adventure and love intertwined when she met Michael on an AYH (American Youth Hostels) trip. Their love story began with a ski date on the slopes of Alpine Meadows and blossomed further when he proposed on a trip to Yosemite. Together, they bought a home in Menlo Park, where they lived for 46 years. Their weekends were spent exploring all the local hiking trails, with her favorite being the trail around Lake Lagunita at Stanford.

After graduating from San Francisco State University with a degree in art history, Lucy embarked on a European adventure with her best friend, Nancy. They even conquered the Half Dome hike together. Lucy and Michael raised their daughters to have the same love of travel and discovery.

Holidays were a time when Lucy truly shined. She loved to create a festive atmosphere, complete with exquisite dinnerware and dazzling decorations. Fashion was another canvas for Lucy's creativity; she possessed an uncanny ability to dress impeccably for any occasion. Lucy loved to dance, often twirling with Michael to the music at Bistro Vida or Left Bank on Saturdays. Sundays were filled with song, as her voice was always heard at Nativity church singing hymns.

Lucy's life was deeply rooted in her San Francisco upbringing. Growing up in the Sunset District with her older brother, Ron, and younger sister, Lillian, she loved spending time in Golden Gate Park. The California Academy of Sciences, the Japanese Tea Garden, and the paddleboats of Stow Lake were all her happy places. Lunch dates with girlfriends at the Cliff House and shopping sprees culminating in a luxurious lunch at Neiman Marcus with Beryl and Jane were cherished traditions.

Lucy's legacy is a tapestry woven with a love for art, a thirst for adventure, a passion for hosting, and an unwavering love for family and friends. She will be deeply missed by all who knew her.

Based on an obituary published in The Almanac Online.

Gary Greenfield

Gary Greenfield died of pulmonary fibrosis on February 27, 2024. He was 80 years old.

Gary was a member of Poulter Laboratory at SRI for more than 50 years. He started at SRI in the early 1960s as a machinist trainee and was quickly recruited to work at Poulter's Calaveras Test Site to machine explosives for experiments there. Among his early jobs were fabricating manganin gauges for measuring the extreme pressures close to an explosive detonation and machining phenolic shells for tests of nuclear-warhead reentry vehicles. With his machining skills and his unsurpassed cleverness, Gary became a lead mechanical technician, then an engineering assistant, and a project leader. In about 1985, he became the head of the technician group in Poulter Laboratory, a position that included management of Poulter's Corral Hollow Experiment Site.

Gary was perennially assigned to lead the most difficult experimental projects in the lab. He guided the fabrication of an 8-foot-diameter, 240-foot-long shock tube for testing US assets subjected to nuclear attack, the launcher that propelled 100-pound scale-model airplanes to 300 mph into reinforced concrete walls, and a launch-tube for Trident missile development. He led teams fielding explosive tests inside nuclear reactors in Pennsylvania and Germany, tunnel collapse tests at White Sands Missile Range in New Mexico, ground-shock measurements in underground explosions at the Nevada Test Site, and gas-pipeline rupture events on the Trans-Canada pipeline. In the lab, he developed fabrication and testing techniques for small-scale models of automobiles, reinforced concrete structures, blast doors

in tunnels, and various explosive devices and fabrication methods that resulted in saving lives threatened by foreign terrorists.

Throughout his career, it was the norm for other project leaders to consult with Gary when they had a difficult explosive or fabrication problem. His knack for quickly identifying the crux of a problem—and a solution to that problem—provided the lab's engineers, technicians, and directors an extraordinary advantage in their personal careers, in addition to the betterment of society through successful research projects. Gary was uniformly helpful to all, and his generosity contributed greatly to the reputation of Poulter Laboratory and SRI.

In retirement, Gary applied his skills and interests to restoring a 1957 Ford Thunderbird, building and flying remote-controlled airplane models, and building a Cobra kit car for which he won numerous show awards.

Gary is survived by his wife, three children, and five grandchildren. He will be missed by many.

Based on a remembrance written by SRI colleagues.

Daniel Courtney Lynch*

Daniel (Dan) Lynch died on March 30, 2024, from kidney failure in St. Helena, California, at the age of 82. As noted in Dan's profile on the Internet Hall of Fame, "As a developer, researcher, and evangelist of the TCP/IP [Transmission Control Protocol/Internet Protocol] protocols, Dan Lynch played a key role in driving global adoption of these protocols and fueling the Internet's commercial success, public visibility, and use."

Dan was born on August 16, 1941, in Los Angeles, California. His father, Thomas Allen Lynch, was a public relations executive at Kaiser Steel, and his mother, Irene Elizabeth (Courtney) Lynch, was a high school teacher with a master's degree in chemistry. Dan was a successful student and had time for side projects, such as correctly calculating the interior space of a Chinese lantern. In an interview Dan noted, "I was a pretty good student. I got mostly A's, except in deportment and conduct."

Dan graduated from Upland High School, in San Bernardino County, in 1959. Then on an Air Force ROTC scholarship, he earned a bachelor's degree in math and philosophy in 1963 from Loyola University. He went on to earn a master's degree in math from the University of California at Los Angeles in 1965. To fulfill the ROTC active duty requirement, he served as a computer programmer at Holloman Air Force Base near Alamogordo, New Mexico, from 1965 to 1969. There, the Cold War's demand for both missile defense and global communications structured components of his future work, providing him with experience using real-time computing skills that presaged the internet's needs.

In 1973, Dan was hired as director of computing facilities at SRI. The Advanced Research Projects Agency Network (ARPANET), the precursor to the internet, was in its first years of operation, and SRI was the second node—or point of connection—on the nascent network. According to Dan on his Internet Hall of Fame profile, on the first day at SRI, a colleague showed Dan the computer he would be working on: "He [the colleague] logs into the computer and from there he switches over to one in Boston. And then he goes to one in London. Then to Utah, then back to one down the hall from us! I fell in love with the ARPANET, hour one."

In 1980, Dan left SRI and moved to Los Angeles to join the University of California's Information Sciences Institute as director of the Information Processing Division, where he led the ARPANET team that made the transition from the original Network Control Program protocols to the now familiar TCP/IP from 1980 until 1983. During this period, while serving on the Internet Activities Board (now the Internet Architecture Board), Dan launched an effort to track TCP/IP implementation on the ARPANET, which significantly propelled US TCP/IP adoption and ultimately enabled the launch of the internet, on January 1, 1983.

With that project complete, Dan wanted to be part of the exciting and changing computer world. Colleagues were starting landmark companies such as Cisco and Sun Microsystems, but Dan's earlier attempts to join the computing big leagues were not commercial successes. After a few failed starts, Dan had an idea that took him back to the ARPANET concept: the creation of workshop to train vendors and developers to configure equipment for routing traffic through the internet. The goal was to make different manufacturers' equipment work together and demonstrate the uses the internet could have for businesses. Starting with volunteers and a wing and a prayer, he launched the first workshop in Monterey, California, in August 1986. It grew exponentially each year and was soon renamed Interop. Within a decade, it had become one of the world's largest computer exhibitions. In 1991, Dan sold Interop for $25 million. In 1993, Dan and Marshall T. Rose wrote and published the *Internet System Handbook*.

After the sale of Interop, Dan started a vineyard in Napa Valley and, in 1994, cofounded CyberCash, an early internet-based payment service for electronic commerce. The company filed for bankruptcy in 2001. Of that experience, Dan noted, "We had great technology but lousy marketing." CyberCash was liquidated, with some tech assets ending up on the back end of PayPal, where the CyberCash name can still be seen in lines of code.

By the late 1990s, Dan had accumulated 1,000 acres at separate locations in the Napa Valley to grow and bottle Syrah and Cabernet wines. In 2003, he began dividing time between homes in St. Helena and Los Altos Hills, California, where he continued to operate Lynch Enterprises.

In 2019, Dan was inducted into the Internet Hall of Fame. Dan was married and divorced three times. He is survived by six children (Julie, Christopher, Eric, Zachary, Katherine, and Michael) and seven grandchildren.

Based on the following sources:

Hafner K. "Daniel C. Lynch, founder of major computer exhibition, dies at 82." The New York Times. *April 1, 2024, B5.*

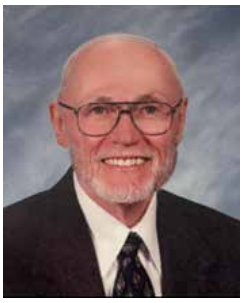
Witting S. "Dan Lynch, founder of Interop tech show and pioneer in internet protocols, dies at 82." San Francisco Chronicle. *April 12, 2004.*

Internet Hall of Fame Inductee.

Internet Hall of Fame Profile.

Center for Cisco Heritage, obituary on Facebook.

Thomas Oliver Passell*



Thomas (Tom) Passell died peacefully at his home in Los Altos, California, on April 21, 2024, at the age of 94.

Tom was born in Chicago on November 24, 1929, was raised in Colby, Kansas, and served in the Indiana National Guard.

Tom received a BS in chemistry from Oklahoma A&M (now Oklahoma State University) and a PhD in chemistry from the University of California at Berkeley. He was a research chemist for Phillips Petroleum Co. and Lockheed Missiles and Space, a senior physicist for SRI and Physics International, and a project manager for the Electric Power Research Institute.

Tom was an active community member in Palo Alto, California, participating in local politics and serving on Citizens Advisory Committees on underground utilities and cable television. He served on the board of directors of Cable Communications Cooperative in Palo Alto from 1982 to 2001, and in 1968 founded the Palo Alto Civic League. He was a long-time active member of the First Congregational Church.

Tom had numerous hobbies, including table tennis, music, photography, public speaking on energy and scientific issues, and travel. He traveled to all seven continents, more than 100 countries, and 49 states. He was an active member of the scientific community, including the American Chemistry Society, the American Physics Society, the American Nuclear Society, and the American Institute of Chemists.

Tom enjoyed music and started his love affair with brass instruments in the fourth grade when he took up the tuba. He also played trombone and trumpet in numerous bands, including the Wichita University Concert and Marching Bands, the Idaho Falls Symphony, the SRI Institooters, and the Los Trancos Woods Community Marching Band.

Tom was married to Agatha Pearl Brown Passell for 46 years, from 1952 until her death in 1998. He is survived by their children, Christine Green, Mark Passell, Cynthia Lopez, Julia Demeter, Andrew Passell, and Matt Passell; nine grandchildren; and 11 great grandchildren.

Tom was married to Joan Brennan until her death in 2021 and is survived by her children, Suzanne Brennan Nathan, Steven Brennan, Clay Brennan, Elizabeth Brennan, and Catherine Brennan; 12 grandchildren; and one great grandchild.

Tom was a kind man who will be dearly missed by his family and friends.

Based on an obituary published in The Almanac Online.

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*Member of the SRI Alumni Association

Note: In the April 2024 newslettter, the obituaries for **Bronwyn Brady*** and **Bernard Michael Wilber*** should have been flagged as indicating they were members of the SRI Alumni Association. We apologize for these omissions.

Please consider joining the SRI Alumni Association. The association was founded in 1996 to provide former staff members the opportunity to keep in touch with SRI and their colleagues, to support the institute in a variety of ways, and to help perpetuate SRI's traditions and values.

SRI Alumni Association members enjoy many activities and services:

- **Alumni Association Newsletter**—Published three times a year, giving news about SRI programs, Alumni Association activities, and individual members (see past issues at https://srialumni.org/newsletter.html).
- **Membership Directory**—A regularly updated resource of contact information for association members.
- **Annual Reunion Meeting**—An opportunity for:
  - Socializing with other Alumni Association members.
  - Viewing the Alumni Hall of Fame Induction ceremony.
  - Hearing a prominent SRI speaker describe an important SRI project or organizational development.
- **Spring Fling**—A picnic or visit to a Bay Area point of interest; past trips have been to the Computer History Museum, the Hiller Aviation Museum, NASA-Ames, and the California Academy of Sciences.
- **SRI Archives**—Association members maintain and catalog SRI's photographic and nonproject archives.

We encourage you to participate in the SRI Alumni Association. Your first year's membership is free. Your membership thereafter will be $25 per year. By completing and returning the application below, you will be enrolled and will receive future issues of the newsletter and invitations to all alumni events. Please indicate how you would like your information to appear in the Membership Directory. If you prefer that some or all of your contact information not be published in the directory, please indicate your preference below. Also, please indicate whether you would prefer receiving the newsletter as an electronic copy (PDF, which saves the association printing/mailing costs) or as a hard copy. If you prefer to complete an application online, please do so at https://srialumni.org/join.html.

SRI ALUMNI ASSOCIATION NEW MEMBERSHIP ENROLLMENT *(Please don't use for renewing your membership)*
First Year's Membership Free!

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Publish address: Yes ☐ No ☐ / Publish email: Yes ☐ No ☐ / Publish telephone: Yes ☐ No ☐

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Date of retirement or when you left SRI: _____

Mail to: SRI Alumni Association, 333 Ravenswood Avenue, M/S AC-108, Menlo Park, CA 94025

The SRI Alumni Newsletter is published three times a year (in April, August, and December) by the SRI Alumni Association.
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